



EPoX

EP-61BXA-M

**A Pentium® II or Deschutes
Slot1 Processor based AGP
mainboard (100/66MHz)**

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*Manual Revision 1.3
February 10, 1998*

Technical Support Services

If you need additional information, help during installation or normal use of this product, please contact your retailer. If your retailer can not help, you may E-Mail us with any questions at the following address tech@epox.com

Record your serial number before installing your EP-61BXA-M mainboard. (the serial number is located near the ISA slots at the edge of the board)

EPoX EP-61BXA-M serial number:

BIOS Upgrades

Please use either our Web Site or BBS for current BIOS Upgrades.

Internet Access

<http://www.epox.com>
sales@epox.com
tech@epox.com

Modem Access

886-2-2218-0997 (Taiwan)
31-182-618451 (The Netherlands)

You can access this number via a Hayes-compatible modem with a 2,400 to 28,800 baud rate. The following setup format is required:

8 Data Bits, No Parity, 1 Stop Bit.

If your modem is unable to connect at higher baud rates, try connecting at 2,400 baud before contacting Technical Support.

Thank you for using EPoX mainboards!

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The product name and revision number are both printed on the mainboard itself.

Handling Procedures

Static electricity can severely damage your equipment. Handle the EP-61BXA-M and any other device in your system with care and avoid unnecessary contact with system components on the mainboard.

Always work on an antistatic surface to avoid possible damage to the motherboard from static discharge.

We assume no responsibility for any damage to the EP-61BXA-M mainboard that results from failure to follow installation instructions or failure to observe safety precautions.

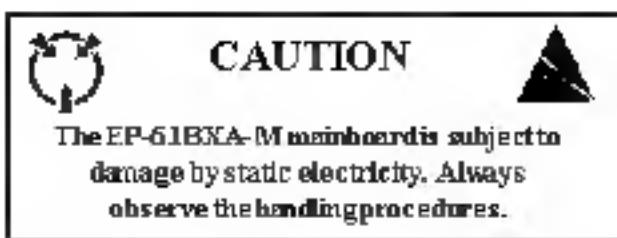


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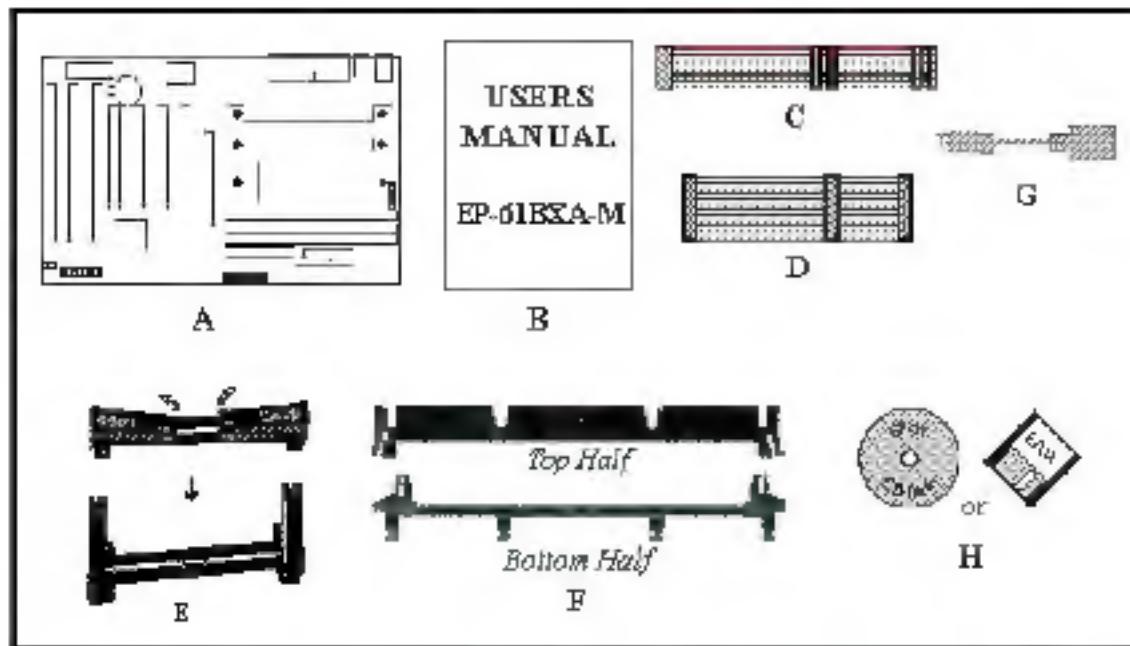
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Section 1 INTRODUCTION

Components Checklist

- ✓ A (1) EP-61BXA-M mainboard
- ✓ B (1) EP-61BXA-M user's manual
- ✓ C (1) Floppy ribbon cable
- ✓ D (1) Hard drive ribbon cables
- ✓ E (1) Foldable Retention Module
- ✓ F (1) Heatsink Support Unit (Optional)
- ✓ G (1) PS/2 to AT keyboard connector adapter (optional)
- ✓ H (1) Bus master drivers
 - (1) USDM
 - (1) DMI (optional)



Overview

Pentium® II or Deschutes Processor

The Pentium® II or Deschutes Processor (The Deschutes Processor at 300/100MHz, 350/100MHz, 400/100MHz and 450/100MHz speed with 512K-L2 cache Versions) is the follow-on to the Pentium® Processor. The Pentium® II or Deschutes Processor, like the Pentium® Pro processor, implements a Dynamic Execution micro-architecture — a unique combination of multiple branch prediction, data flow analysis, and speculative execution. This enables the Pentium® II Processor to deliver higher performance than the Pentium® processor, while maintaining binary compatibility with all previous Intel architecture processors.

A significant feature of the Pentium® II or Deschutes Processor, from a system perspective, is the built-in direct multiprocessing support. In order to achieve multiprocessing, and maintain the memory and I/O bandwidth to support it, new system designs are needed. For systems with dual processors, it is important to consider the additional power burdens and signal integrity issues of supporting multiple loads on a high speed bus. The Pentium® II or Deschutes Processor card supports both uni-processor and dual processor implementations.

The Pentium® II or Deschutes Processor utilizes Single Edge Contact (S.E.C.) (Figure 1) cartridge packaging technology. The S.E.C. cartridge allows the L2 cache to remain tightly coupled to the processor, while maintaining flexibility when implementing high performance processors into OEM systems. The second level cache is performance optimized and tested at the cartridge level. The S.E.C. cartridge utilizes surface mounted core components and a printed circuit board with an edge finger connection. The S.E.C. cartridge package introduced on the Pentium® II Processor will also be used in future Slot 1 processors.

The S.E.C. cartridge has the following features: a thermal plate, a cover and a PCB with an edge finger connection. The thermal plate allows standardized heatsink attachment or customized thermal solutions. The thermal plate enables a reusable heatsink to minimize fit issues for serviceability, upgradeability and replacement. The full enclosure also protects the surface mount components. The edge finger connection maintains socketability for system configuration. The edge finger connector is denoted as 'Slot 1 connector' in this and other documentation.

The entire enclosed product is called the Pentium® II or Deschutes Processor. The

packaging technology and each of the physical elements of the product are referred to using accurate technical descriptions. This allows clear reference to the products as just a processor. This is the model used in past packaging technologies like PGA, TCF, PQFP, DIP, etc.

S.E.C. Cartridge Terminology

- Pentium® II or Deschutes Processor
The new enclosed card packaging technology is called a "Single Edge Contact cartridge." This is similar to previous names for packaging technology such as PGA or TCP.
- Processor card
The green PCB (with or without components on it)
- Processor core
The silicon on the PLGA package on the PCB
- Cover
The plastic cover on the opposite side from the thermal plate
- Slot 1
The slot that the S E C. cartridge plugs into, just as the Pentium® Pro processor uses Socket 8.
- Retention mechanism
Formerly "retention module" the dual posts, etc. that holds the cartridge in place.
- Thermal plate
The heatsink attachment plate
- Heat sink supports
The support pieces that are mounted on the mainboard to provide added support for heatsinks.

The L2 cache (TagRAM, PBSRAM) components keep standard industry names.

The Pentium® II or Deschutes Processor is the first product to utilize the S.E.C. cartridge technology and Slot 1 connector. Unless otherwise noted, any references to "Pentium® II Processor," "Pentium® II or Deschutes Processor/Slot 1 processor" or "Deschutes Proces-

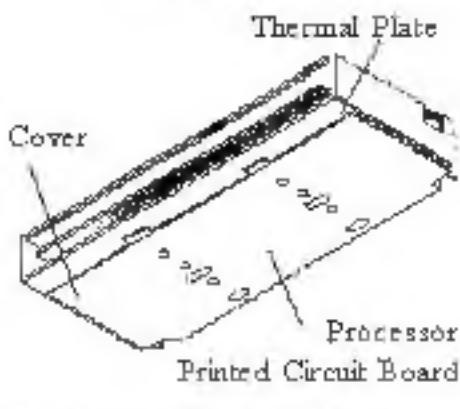


Figure 1: Pentium® II or Deschutes Processor CPU with S.E.C. Cartridge

so" will apply to both the Pentium® II Processor desktop processors.

Accelerated Graphics Port (AGP or A.G.P.)

Typically, 3D graphics rendering requires a tremendous amount of memory, and demands ever increasing throughput speed as well. As 3D products for the personal computer become more and more popular, these demands will only increase. This will cause a rise in costs for both end users and manufacturers. Lowering these costs as well as improving performance is the primary motivation behind AGP. By providing a massive increase in the bandwidth available between the video card and the processor, it will assist in relieving some of these pressures for quite sometime.

Hardware Monitoring

Hardware monitoring allows you to monitor various aspects of your systems operations and status. These include features such as CPU temperature, voltage and fan RPM's.

Desktop Management Interface (DMI)

DMI, or Desktop Management Interface, is a BIOS level method for monitoring specific BIOS related hardware features. It allows the BIOS to collect and store information specific to the system, so that vendors and system integrators will have greater access to information regarding system configuration and design. This allows for better troubleshooting, migration planning, and upgradeability decision making.

EP-61BXA-M Form-Factor

The EPoX EP-61BXA-M is designed with ATX Form Factor - the latest industry standard of chassis. The ATX form factor is essentially a Baby-AT baseboard rotated 90 degrees within the chassis enclosure and a new mounting configuration for the power supply. With these changes the processor is relocated away from the expansion slots, allowing them all to hold full length add-in cards. ATX defines a double height aperture to the rear of the chassis which can be used to host a wide range of onboard I/O. Only the size and position of this aperture is defined, allowing PC manufacturers to add new I/O features (e.g., TV input, TV output, joystick, modem, LAN, audio, etc.) to systems. This will help systems integrators differentiate their products in the marketplace, and better meet your needs.

- By integrating more I/O down onto the board and better positioning the hard drive and floppy connectors material cost of cables and add-in cards is reduced.
- By reducing the number of cables and components in the system, manufacturing time and inventory holding costs are reduced and reliability will increase.
- By using an optimized power supply, it's possible to reduce cooling costs and lower acoustical noise. An ATX power supply, which has a side-mounted fan, allows direct cooling of the processor and add-in cards making a secondary fan or active heatsink unnecessary in most system applications.

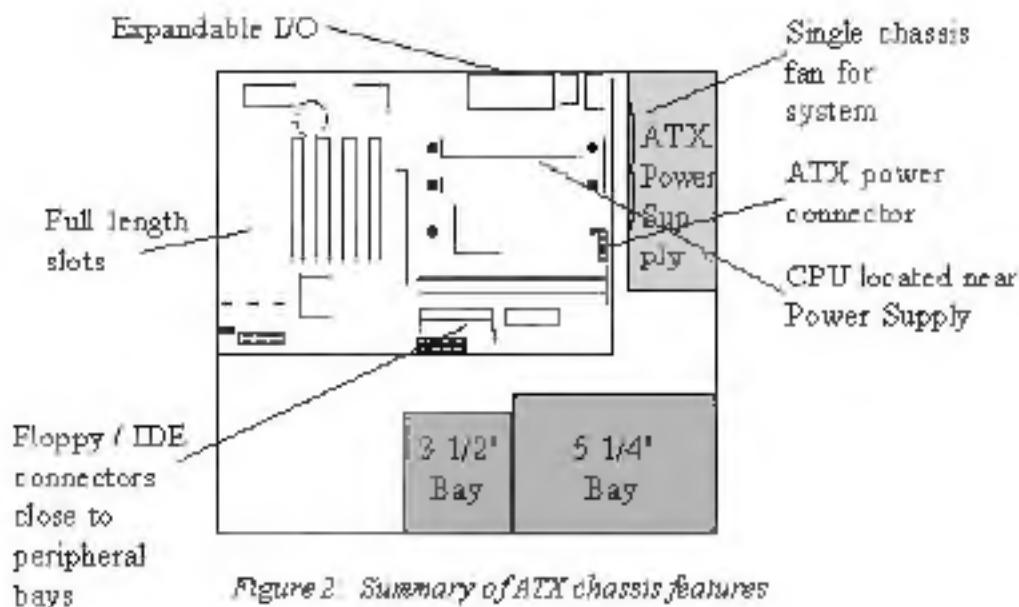
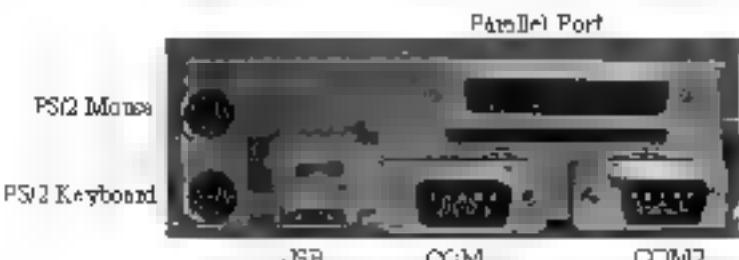


Figure 2. Summary of ATX chassis features

I/O Shield Connector

The EP-61BXA-M is equipped with an I/O back pane. Please use the appropriate I/O shield (figure 3).

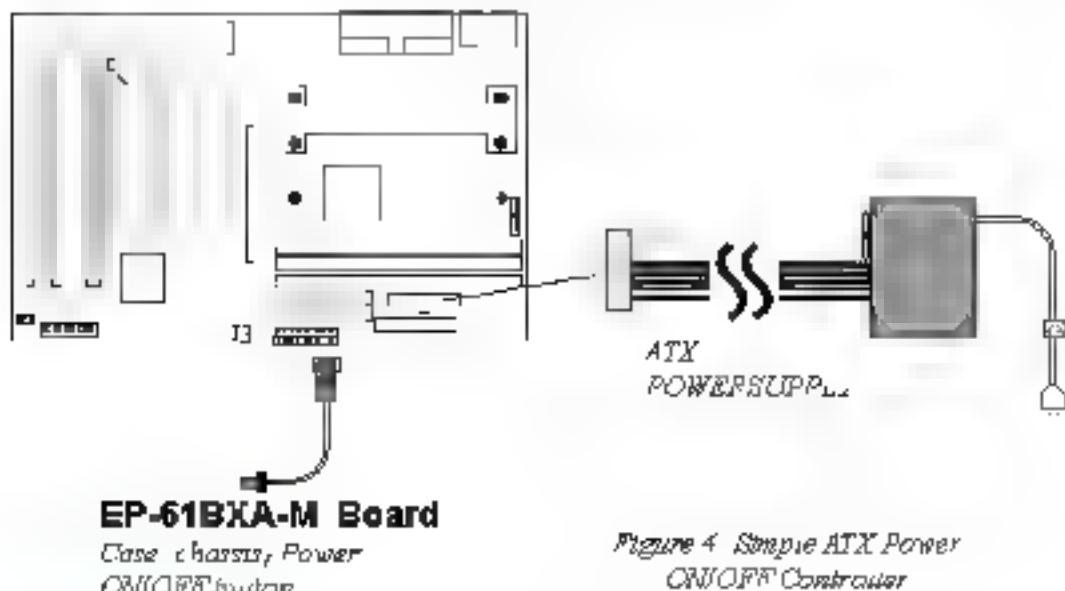
Figure 3
EP-61BXA-M
I/O back
panel layout



Power-On/Off (Remote)

The EP-61BXA-M has a single 20-pin connector for ATX power supplies. For ATX power supplies that support the **Remote On/Off** feature, this should be connected to the systems front panel for system Power On/Off button. The systems power On/Off button should be a momentary button that is normally open.

The EP-61BXA-M has been designed with "Soft Off" functions. You can turn Off the system from one of two sources. The first is the front panel Power On/Off button, and the other is the "Soft Off" function coming from the EP-61BXA-M's onboard circuit controller that can be controlled by the operating system. Windows 95 will control this when the user clicks that they are ready to Shutdown the system.



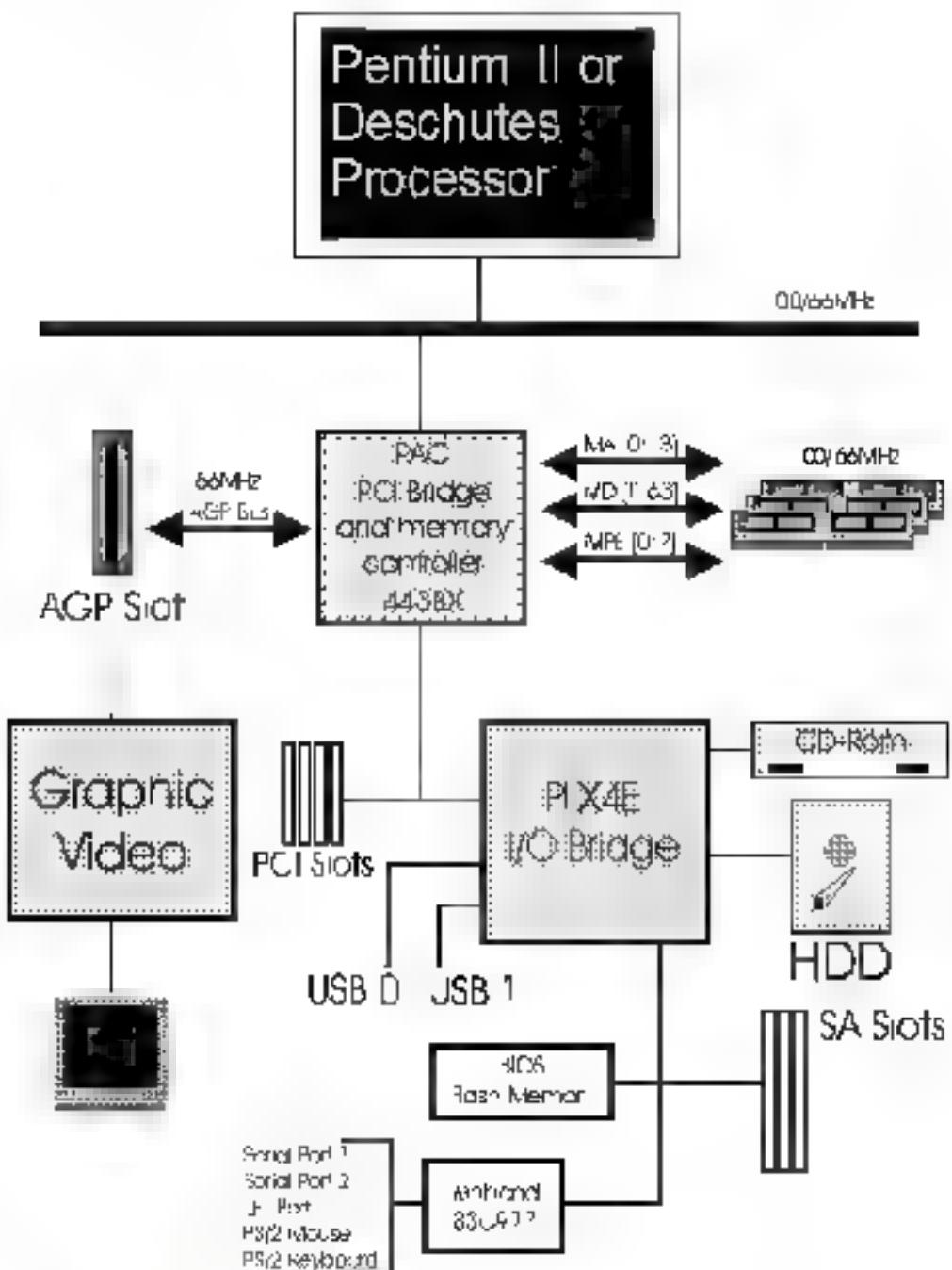
System Block Diagram

Figure 5. System Block Diagram

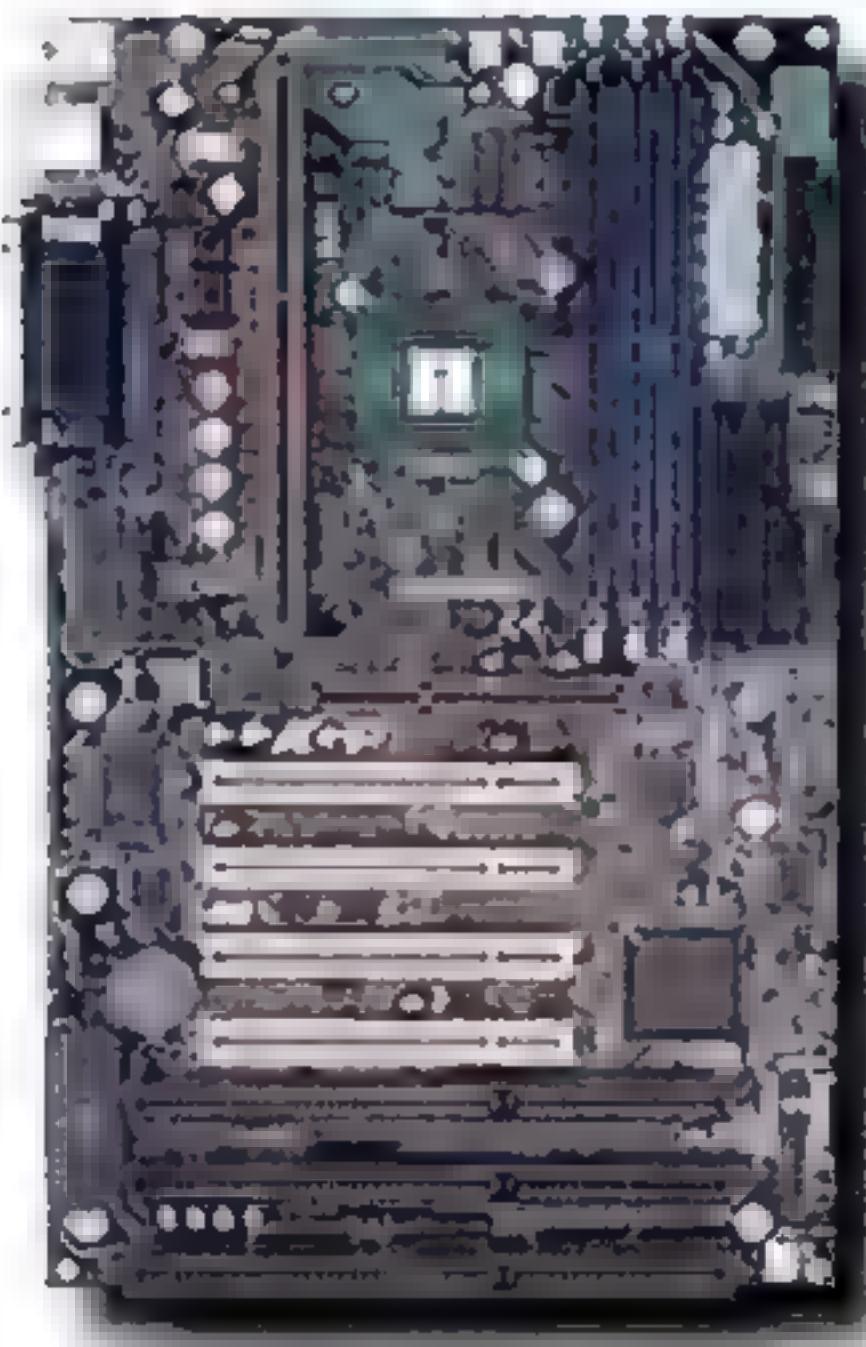
Section 2 FEATURES

EP-61BXA-M Features:

- EP-61BXA-M is based on the Pentium® II or Deschutes Processor operating at 233 - 333MHz, 66MHz or 300 - 550MHz - 00MHz on Slot 1. The board is configured by an Easy-Setting Single Jumper (ESSJ) to match your CPU clock speed.
- Designed with Intel's 82443 BX AGPset
- Supports up to 768 Mega of DRAM (maximum of 16 MB on board). You can use 168-pin DIMM x 3. It will automatically detect Extended Data Output (EDO) DRAM at 66MHz only or Synchronous DRAM memory (SDRAM) at 66MHz or 100MHz (please see Section 3.2).
- EP-61BXA-M will support Error Checking and Correcting (ECC) when using parity DRAM memory modules. This will detect multiple bit errors and correct 1 bit memory errors.
- Supports (3) 16 bit ISA slots, (4) 32 bit PCI slots, (1) AGP slot and provides 2 independent high performance PCI IDE interfaces capable of supporting PIO Mode 3/4 and Ultra DMA 33 devices. The EP-61BXA-M supports (4) PCI Bus Master slots and a jumperless PCI INT# control scheme which reduces configuration confusion when plugging in PCI cards.
- Supports ATAPI (e.g. CD-ROM) devices on both Primary and Secondary IDE interfaces.
- Designed with Winbond W83977TF Multi I/O: 1 floppy port, parallel port (EPP/ECP) and (2) serial ports (6550 Fast UART). Note: Japanese "Floppy 3 mode" is also supported.
- Includes a PS/2 mouse connector
- Allows use of a PS/2 keyboard
- Features Award Plug & Play BIOS. With Flash Memory you can always upgrade to the current BIOS as they are released (<http://www.epox.com> please visit our Technical Support section for the latest updates)

- EP-61BXA-M utilizes a Lithium battery which provides environmental protection and longer battery life
- Supports the Universal Serial Bus (USB) connector. The onboard PIIX4E chip provides the means for connecting PC peripherals such as keyboards, joysticks, telephones and modems.
- Built-in ATX 20-pin power supply connector
- Software power down when using Windows® 95
- Supports ring-in feature remote power on through external modem allows system to be turned on remotely
- Resume by Alarm Allows your system to turn on at a preselected time
- Power Loss Recovery In the event of a power outage your system will automatically turn itself back on without user intervention
- Supports CPU Hardware sleep and SMM (System Management Mode)
- Supports Desktop Management Interface (DMI) facilitating the management of desktop computers, hardware and software components and peripherals, whether they are stand-alone systems or linked into networks [optional]
- Supports Hot key Any key or password Keyboard power ON function (KBPO).
- Supports USDM software to offer motherboard various status on Windows® 95/98, or Windows® NT 4.0/5.0
- Supports the CPU PWR and Chassis fan Auto stop in sleep mode
- Supports the System Power LED (PANEL) blinks in the sleep mode
- Built-in WOL (Wake On Lan) Connector
- Built-in SB-LINK Header for Creative Blaster® AWE64D PCI Bus Sound Card

Section 3
INSTALLATION



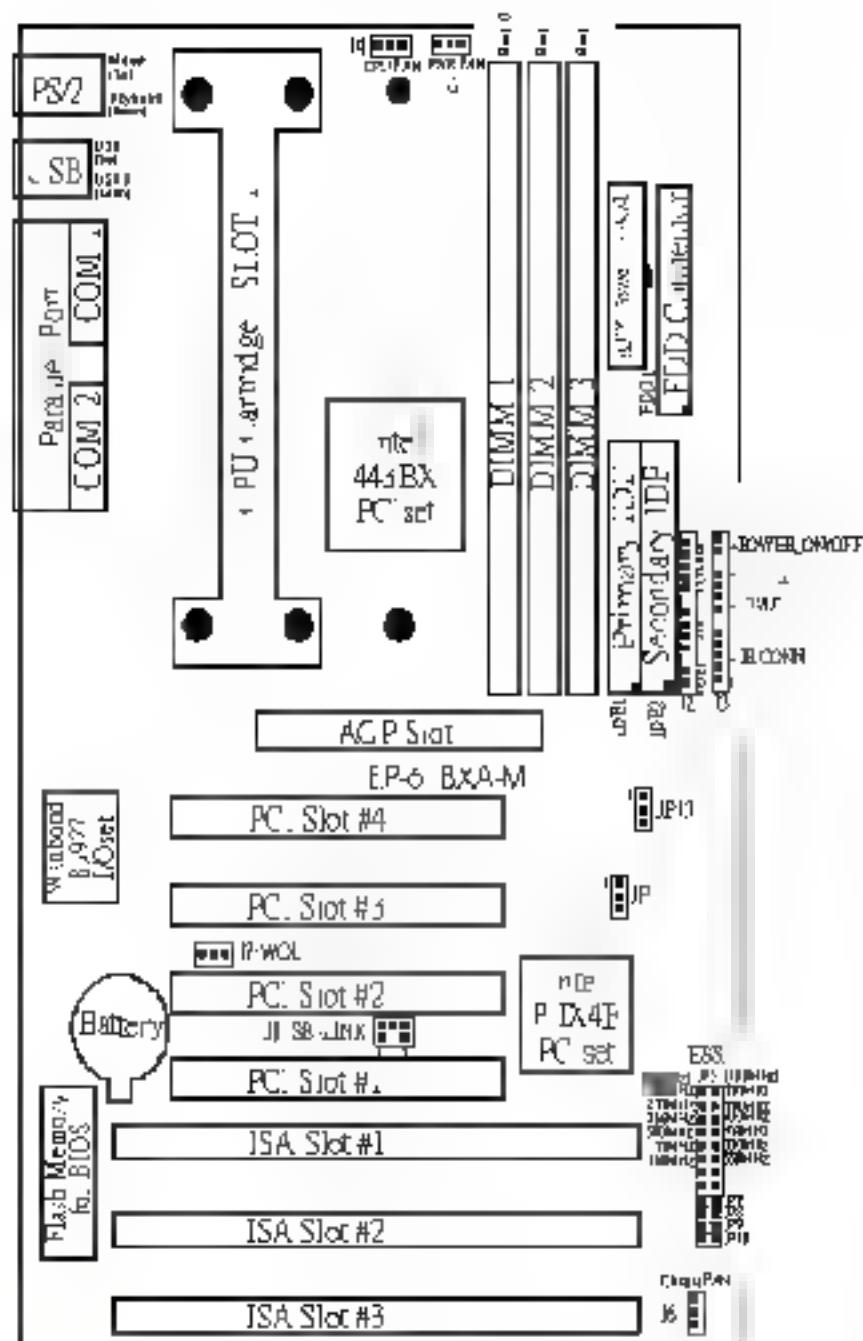
EP-61BXA M Detailed Layout

Figure 2

Easy Installation Procedure

Easy Installation Procedure

The following must be completed before powering on your new system

- 3 1. Configure Jumpers to match your hardware
- 3 2. Install memory chips
- 3 3. Install Pentium II or Deschutes Processor
- 3 4. Device Connectors

Section 3-1

Configure Jumpers

EPoX designs all motherboards with the fewest jumpers to make your install fast and easy.

The following will describe all of the jumpers that you are required to set before moving on to step 3 2.

Note: The jumpers are depicted as shown (Figure 1), in their correct physical orientation.

JP1  CMOS Clear
JP1 = 1 2 Run Mode (Default)
 = 2-3 Clear CMOS (momentarily)

JP13  Keyboard Power ON function (refer the section 3-5)
JP13 = 1 2 Enabled (Default)
 = 2 3 Disabled

JP7  WOL (WakeUp On Lan) Connector
Reserved for NIC (Network Interface Card) to Wake the System.

JP8  SB-LINK Header
Reserved for Creative SB-LINK™ (Sound Blaster LINK™) with the Sound Blaster® AW E64D PCI Sound Card to Compatible DOS games and Multimedia applications.

CPU Processor Selection

Pentium® II Processor Internal Speeds	CPU Clock Rate 66MHz	ESSJ	CPL Clock Rate 100MHz	Deschutes Processor Internal Speeds
		JP3	JP3	
200MHz	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	333MHz	
233MHz	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	350MHz	
266MHz	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	400MHz	
300MHz	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	450MHz	
333MHz	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	500MHz	
366MHz	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	550MHz	
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Disabled ESSJ	
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	JP7	
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	JP8	
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	JP9	
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	JP10	

Reserved for
CPUs in the
future

* Default at Pentium® II 266MHz (66MHz System Clock Rate)

Note: Based on the implementation of Intel 440BX PCIset, EP-61BXA-M is able to provides two host bus frequencies – either 66 or 100MHz for Slot1 processor and memory operating. Automatically the default is at 66MHz once Pentium® II processor to be mounted onto this manboard. In case of Deschutes processor it is self-adjusted to 100MHz without any manual modification required. However, no matter what kind of Slot1 processor you installed, it should come with right memory modules for normal and stable operation. For example, if you install a Deschutes processor you should use the SDRAM module with 100MHz based or above to match the CPU speed. Furthermore, one thing you may need to bear in mind, before the CPU installation, it is anyway our advice to use JP3 and set up right speed of Slot1 processor at any time. You may feel like to know about AGP interface, which always runs under 66MHz no matter what frequency of processor you installed.

JP100:  BUS Clock
 JP100 = 1 2 AUTO (Default)
 2 3 PC100 Only

Section 3-2

System Memory Configuration

Memory Layout

The EP-61BXA-M supports 3 168 pin DIMMs (Dual In-line Memory Module). The DIMMs can be either EDO (Extended Data Out) or SDRAM (Synchronized DRAM). The DIMMs may be installed using just one chip.

- We recommend using SDRAM DIMM can not mixing with EDO DIMM modules
- The EDO DIMM only support Pentium® II Processor at 66MHz not support Deschutes Processor at 100MHz
- We recommend when installed the 100MHz Deschutes Processor using DIMM SDRAM must be 125MHz 8ns bus speed If used 100MHz 10ns SDRAM may be critical timing for the motherboard
- About the "PC 100 SDRAM spec" information you may visit Intel's home page at <http://developer.intel.com/design/priests/memory/index.htm>
- DIMM SDRAM may be 83MHz 2ns 100MHz 10ns or 125MHz 8ns bus speed

Figure 2 and Table 1 show several possible memory configurations using

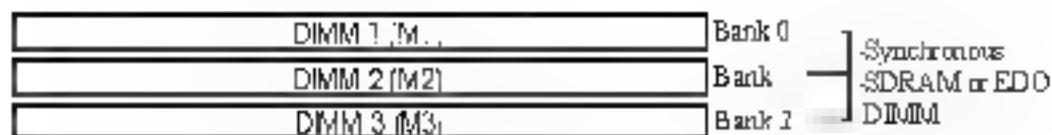


Figure 2

	DIMM X 1 Slot A	DIMM X 2 Slot B	DIMM X 3 Slot C
- 2 SDRAM Memory	ECC UNBUFFERED SDRAM 16MB 2MB 144MD 176MD 144MD X X	ECC UNBUFFERED SDRAM 16MB 32MB 144MD 176MD 144MD X X	ECC UNBUFFERED SDRAM 16MB 32MB 144MD 76MB 144MD X X
- 2 EDO Memory	ECC UNBUFFERED EDO 16MB 2MB 144MD 176MD 144MD X X	ECC UNBUFFERED EDO 16MB 32MB 144MD 176MD 144MD X X	N/A
- 2 EDO Memory	ECC UNBUFFERED EDO 16MB 2MB 144MD 176MD 144MD X X	N/A	N/A

TABLE 2

* SDRAM only supports 8, 16, 32, 64, 128MB DIMM modules

* EDO only supports Pentium® Processor at 60MHz not supports Deschutes Processor at 100MHz

DIMM Module Installation

Figure 3 displays the notch marks and what they should look like on your DIMM memory module.

DIMMs have 168 pins and two notches that will match with the onboard DIMM socket. DIMM modules are installed by placing the chip firmly into the socket at a 90 degree angle and pressing straight down (figure 6) until it fits tightly into the DIMM socket (figure 7).



Figure 3

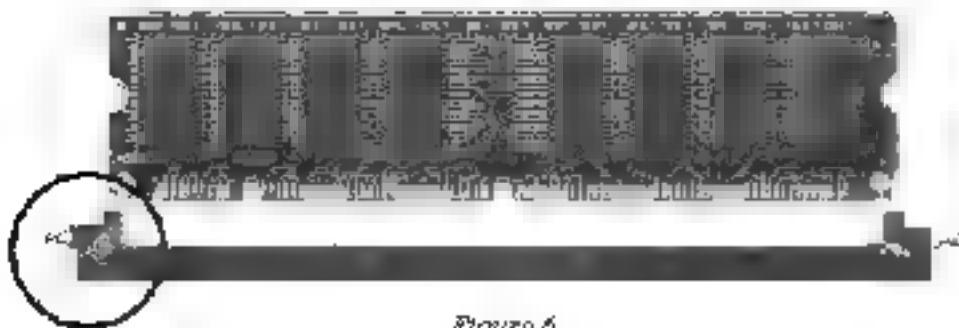


Figure 6

DIMM Module clip before installation

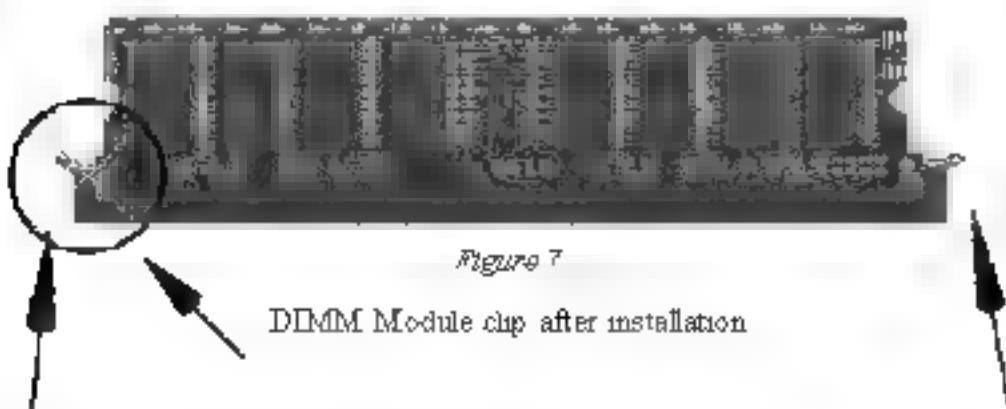


Figure 7

DIMM Module clip after installation

To remove the DIMM module simply press down both of the white caps on either side and the module will be released from the socket.

Section 3-3 Installing a Pentium II or Deschutes Processor

The EP 61LXA M uses the Single Edge Contact "SEC" slot for a Pentium II processor packaged in an SEC cartridge. The SEC slot is not compatible with other non-Pentium II processors.

Please have ready the following list of components so that we may install the processor onto the motherboard.

- 1 Heat sink support top/bottom piece
- 2 Pentium II processor heat sink
- 3 Intel Pentium II Processor

OK now that you have all of your components ready we can start

- ❶ First please refer to figure 8 below and follow the direction to lift up the fixed foldable pentium® II Retention Mechanism. This pre installed device is designed for you to install Pentium® II CPU more easier and to avoid any damage on the board due to overtightening the four screws.
- ❷ One thing must be kept in your mind that please make sure to lift upright the foldable parts of the Retention module to fit and install CPU properly.



Figure 8

Now we are going to install the heatsink support base piece (figure 9) onto the motherboard. There's both a large and small hole (figure 10) so that the base will only fit in one direction. This piece needs to be pushed into the holes firmly until it is seated.

Now we are ready to install the SEC Cartridge (Pentium II Processor) into the Retention Module. The SEC Cartridge is mounted by sliding the SEC Cartridge into the Retention Module and letting it slide all the way down. Once it reaches the

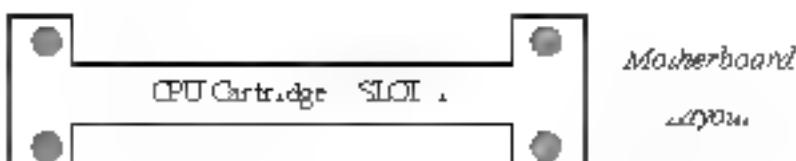
bottom make sure you press firmly on SBC cartridge to firmly secure into the Slot 1 Socket.

Now we need to secure the heatsink with the top half of the support (figure 11). Take the top piece of the support and slide it onto the bottom fin (figure 10) on the heatsink and then push forward until it clips onto the bottom base (figure 9) that is already there (figure 11).



Figure 9

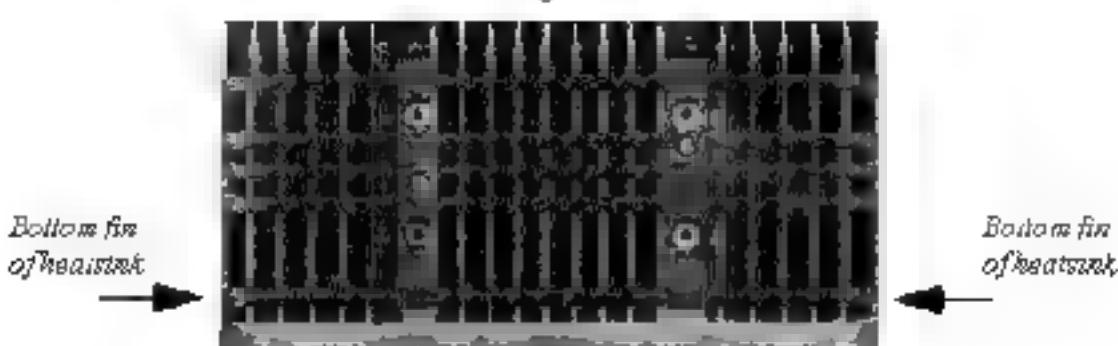
Figure 9 shows the layout of Slot 1 and the holes for mounting the Heatsink base piece (figure 8).



Large Hole for Hea. Sink Base

Small Hole for Hea. Sink Base

Figure 10



Top half of the support

Figure 11

Section 3-4

Device Connectors

Please install the motherboard into the chassis

Now that your motherboard is installed you are ready to reconnect all your connections (figure 12)

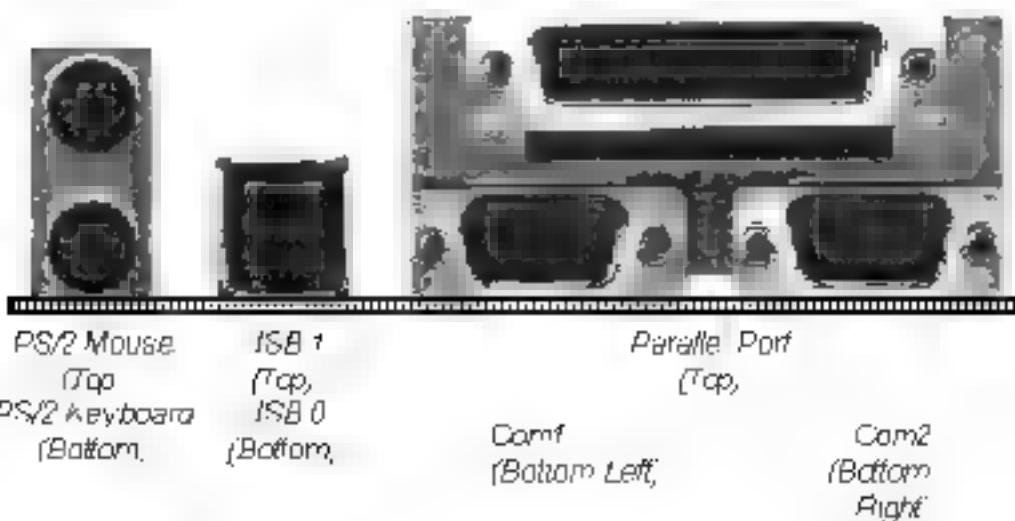


Figure 12

- J4** CPU Fan Power
 - A plug in for the CPU Fan Power
- J5** Power Supply Fan Monitoring
 - A plug in for the Power supply so that BIOS can monitor the RPM's
- J6** Chassis Fan Power
 - A plug in for the chassis Fan Power
- J7** WOL (Wake On Lan) Connector
- J8** SB LINK Connector
 - 9 PIN Header for Creative Blaster® AWE64D PCI Sound Card
- PW2** ATX Power Connector
 - 20 pin power connector
- J2,J3** Chassis Panel Connector
 - Keylock Speaker Reset Sleep Turbo LED and HDD LED
- IDE1** Primary IDE Connector
- IDE2** Secondary IDE Connector
- FDD1** Floppy Controller Connector

Section 3-4

Device Connectors

Please install the motherboard into the chassis

Now that your motherboard is installed you are ready to reconnect all your connections (figure 12)

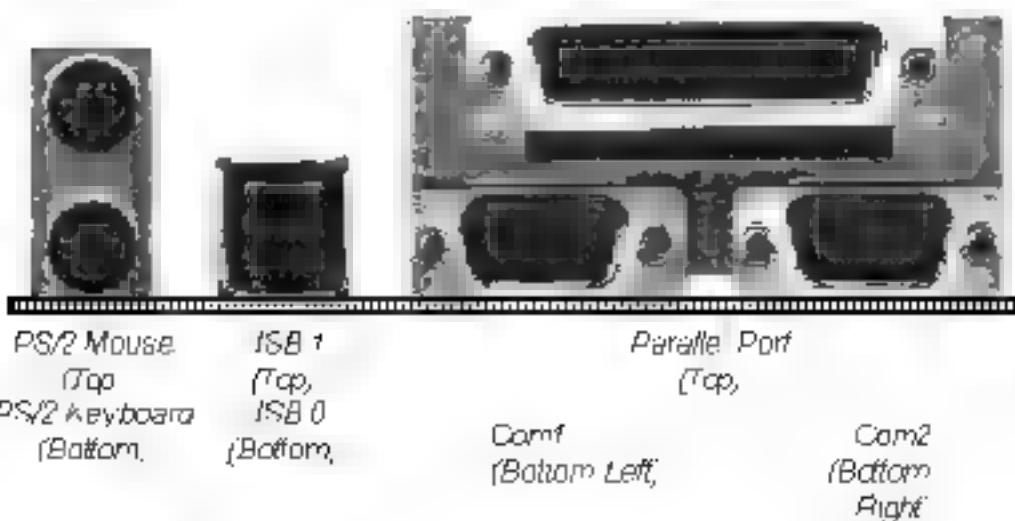


Figure 12

- J4** CPU Fan Power
 - A plug in for the CPU Fan Power
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 - A plug in for the chassis Fan Power
- J7** WOL (Wake On Lan) Connector
- J8** SB LINK Connector
 - 9 PIN Header for Creative Blaster® AWE64D PCI Sound Card
- PW2** ATX Power Connector
 - 20 pin power connector
- J2,J3** Chassis Panel Connector
 - Keylock Speaker Reset Sleep Turbo LED and HDD LED
- IDE1** Primary IDE Connector
- IDE2** Secondary IDE Connector
- FDD1** Floppy Controller Connector

Section 2-4 Device Connectors (continued)

J2 1 **Reset** Closed to restart system



Speaker Connect to the system's speaker for beeping

1 Speaker 3 GND
2 N/C 4 GND

KeyLock Keyboard lock switch & Power LED connector

1 Power LED(+) 4 Keylock
2 N/C 5 GND
3 GND * The power LED lights when the system is powered on and blinks in SLEEP MODE (Suspend mode)

J3 1 **IR Connector**



IDE LED indicator LED ON when Onboard PCI IDE Hard disks is activate

Turbo LED indicator LED ON when higher speed is selected

Power On/Off This is connected to the power button on the case. Using the Soft Off by Pwr BNTR feature you can choose either Instant Off (turns system off immediately) or 4 sec delay (you need to hold the button down for 4 seconds before the system turns off). When the system is in 4 sec delay mode, EPoK has added a special feature to make the system go into suspend mode when the button is pressed momentarily.

Section 3-5

External Modem Ring-In Power ON and Keyboard Power ON Functions (KBPO)

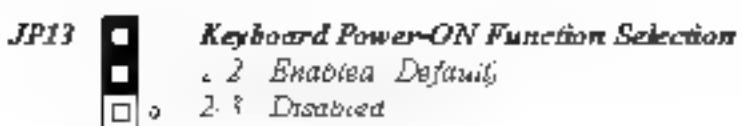
On the basis of bounded functions in I/O chipset, the two serial ports are able to support the External Modem Ring-In Power ON function. Once users connect the external modem to COM1 or COM2, the EP-61BXA-M motherboard allows users to turn on their system through the remote and host's dial up control.

Exclusive Keyboard Power ON Function

To ameliorate a unique feature to benefit users we devoted the easiest and most convenient way to turn on your system based on the the ATX power supply

How to work with it

Step 1 Please check JP 3 at the position 2 after you finished the system installation



Step 2 Push the momentary switch (J3 PW ON) to turn on your system and then push again to hold for more than 4 seconds to turn it off after counted memory as soon as you turn it on.

Step 3 You can enjoy the Keyboard Power ON function (KBPO) by pressing any key. Hot key (*Ctrl F1 F2 ... F12*), Password A maximum of 5 characters can be entered and BUTTON only to turn on your system. Please refer to the BIOS integrated peripherals setup for details (Page 4-27). The BIOS Default is keyboard Hot key <*Ctrl*> <*F1*> to turn on the system. Your system will be turned on automatically, after releasing the keys. To power off your system you can use the Soft-OFF function under Windows 95.

Notes

Intel ATX version 2.0 specification has recommended you use the power supply with 0.72A(720mA) in 5VSB. With our EP-61BXA-M mainboard, the 5VSB standby power only has to be > 0.1A (100mA), then you can enjoy this unique benefit. However the ATX power supply which is < 0.1A (100mA) is still applicable to your system by placed JP 3 at the position 2/3 to disable this feature.

Section 4

AWARD BIOS SETUP

BIOS Instructions

Award's ROM BIOS provides a built-in Setup program which allows user to modify the basic system configuration and hardware parameters. The modified data will be stored in a battery-backed CMOS so that data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM will stay unchanged unless there is a configuration change in the system, such as hard drive replacement or a device is added.

It is possible for the CMOS battery to fail, this will cause data loss in the CMOS only. If this does happen you will need to reconfigure your BIOS settings.

To enter the Setup Program

Power on the computer and press the key immediately, this will bring you into the BIOS CMOS SETUP UTILITY

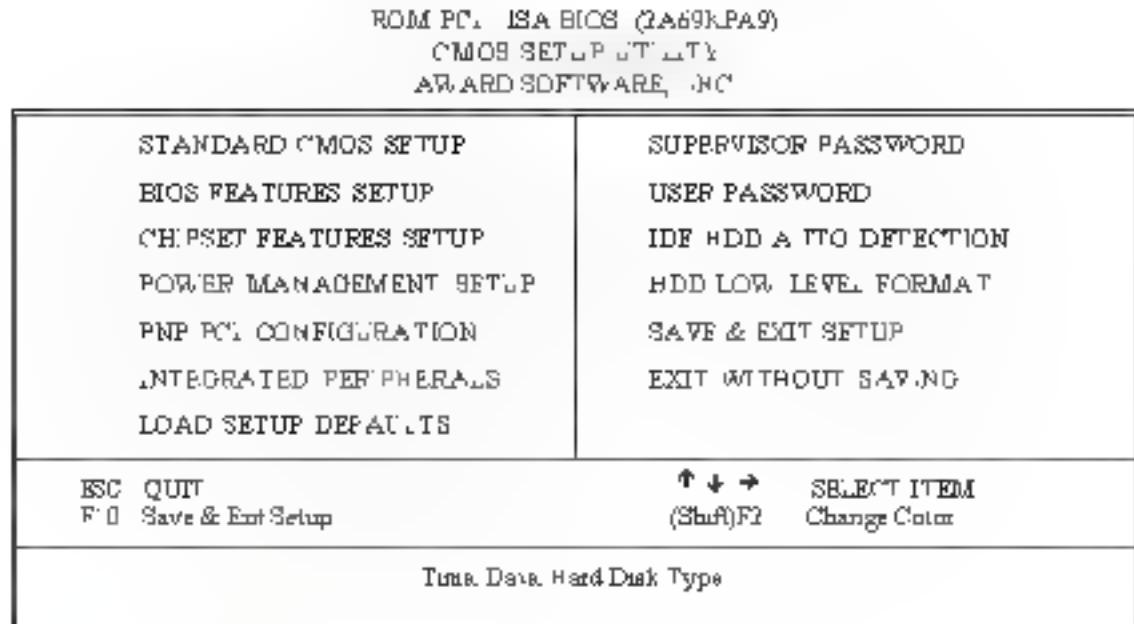


Figure 4. CMOS Setup Utility

The menu displays all the major selection items. Select the item you need to reconfigure. The selection is made by moving the cursor (press any direction key) to the item and pressing the Enter key. An on-line help message is displayed at the bottom of the screen as the cursor is moved to various items which provides a better understanding of each function. When a selection is made, the menu of the selected item will appear so that the user can modify associated configuration parameters.

4-1 Standard CMOS Setup

Choose 'Standard CMOS Setup' in the CMOS SETUP UTILITY Menu (Figure 2). The Standard CMOS Setup allows the user to configure system settings such as the current date and time, type of hard disk drive installed, floppy drive type, and display type. Memory size is auto-detected by the BIOS and displayed for your reference. When a field is highlighted (use direction keys to move the cursor and the <Enter> key to select) the entries in the field can be changed by pressing the <PgDn> or the <PgUp> key.

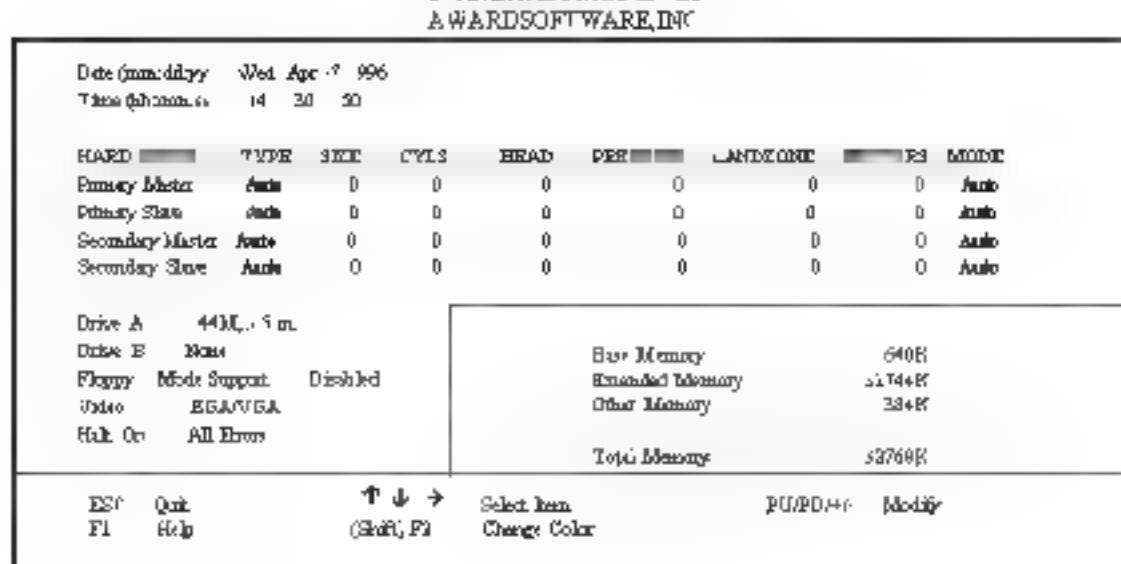


Figure 2 Standard CMOS Setup

NOTE If the hard disk Primary Master/Slave and Secondary Master/Slave are set to Auto, then the hard disk size and model will be auto-detected.

NOTE: The "Halt On" field is used to determine when to halt the system by the BIOS if an error occurs.

NOTE: Floppy 3 Mode support is a mode used to support a special 3.5" drive used in Japan. This is a 3.5" disk that stores only 1.2 MB, the default setting for this is disabled.

4-2 BIOS Features Setup

Selecting the "BIOS FEATURES SETUP" option in the CMOS SETUP UTILITY menu allows users to change system related parameters in the displayed menu. This menu shows all of the manufacturer's default values for the EP-61BXA-M.

Pressing the F1 key will display a help message for the selected item.

RDM PC/ISA BIOS (JA69KPA9)			
BIOS FEATURES SETUP			
AWARD SOFTWARE, INC.			
Virus Warning	Disabled	Video BIOS	Shadow
CPU Internal Cache	Enabled	C0000-CBFFF	Shadow
External Cache	Enabled	C C000-CFFFF	Shadow
Quick Power On Self Test	Enabled	D0000-D3FFF	Shadow
Boot Sequence	A, C SCS	D4000-D7FFF	Shadow
Swap Floppy Drive	Disabled	D8000-DBFFF	Shadow
Boot Up Floppy Seek	Enabled	D C000-DFFF	Shadow
Boot Up Numlock Status	On		
Boot Up System Speed	High		
Beep At Boot	Two		
Typematic Rate Setting	Disabled		
Typematic Rate (Chars/Sec)	0		
Typematic Delay (Msec)	40		
Security Option	Setup		
PCI/VGA Palette Swap	Disabled	E ₀	Quit
Assign IRQ For VGA	Enabled	F1	Help
DS Select For DRAM > 4MB	Normal	F2	Old Value
Report NO FDD For Win 9x	No	F3	Load Setup Defaults
		↑ ↓ →	Select Item

Figure 1 BIOS Features Setup

Virus Warning: During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and an error message will appear.

You should then run an anti-virus program to locate the virus. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

The default value is Disabled.

Enabled: Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector.

Disabled: No warning message will appear when anything attempts to access the boot sector.

Note: Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program we recommend that you first disable the virus warning.

CPU Internal Cache This controls the status of the processor's internal cache area.

The default is Enabled.

Enabled: This activates the processor's internal cache thereby increasing performance.

Disabled: This deactivates the processor's internal cache thereby lowering performance.

External (L2) Cache This controls the status of the external L2 cache area.

The default is Enabled.

Enabled: This activates the motherboard's L2 cache thereby increasing performance.

Disabled: This deactivates the motherboard's L2 cache thereby lowering performance.

Quick Power On Self Test This category speeds up the Power On Self Test (POST).

The default is Enabled.

Enabled: This setting will shorten or skip off the items checked during POST.

Disabled: Normal POST.

Boot Sequence This category determines which drive is searched first by the O/S Operating System.

The default is A,C,SCSI.

The following is your list of options:

[A] C SCSIJ [C] A SCSIJ [C] CD-ROM AJ [CD-ROM C] AJ
[D] A CD-ROM [E] A CD-ROM [F] A CD-ROM [SCSI A] CI
[SCSI C] AJ [C] OnyJ]

Swap Floppy Drive This will swap your physical drive letters A & B if you are using two floppy disks
The default is Disabled

Enabled. Floppy A & B will be swapped under the O/S

Disabled. Floppy A & B will be not swapped

Boot Up Floppy Seek During Power On Self Test (POST), BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. Only 360K type is 40 tracks while 720K, 1.2MB and 1.44MB are all 80 tracks

The default is Enabled

Enabled: The BIOS will search the floppy disk drive to determine if it is 40 or 80 tracks

Disabled: The BIOS will no search for the type of floppy disk drive by track number

NOTE BIOS can not tell the difference between 720K, 1.2MB and 1.44MB drive types as they are all 80 tracks

Boot Up NumLock Status This controls the state of the NumLock key when the system boots

The default is On

On The keypad acts as a numeric pad

Off The keypad acts like the cursor keys

Boot UP System Speed This controls the initial system speed of the computer

The default is High

High This setting sets the computer into normal operation mode

*Low This setting sets the computer into a slower operating mode. Some add-in peripherals or old software may require this setting. Using **CTRL+ALT+L+** will switch you back into high speed mode*

Gate A20 Option This refers to the way the system addresses memory above 1MB extended memory

The default is Fast

Normal. The A20 signal is controlled by the keyboard controller or chipset hardware

Fast. The A20 signal is controlled by Port 92 or chipset specific method.

TypeMatic Rate Setting This determines the keystrokes repeat rate
The default is Disab ed

Enabled: Allows typeMatic rate and typeMatic delay programming.

Disabled: The typeMatic rate and typeMatic delay will be controlled by the keyboard controller in your system

TypeMatic Rate (Chars/Sec) This is the number of characters that will be re peated by a keyboard press

The default is 6

6: 6 characters per second 8: 8 characters per second

10: 10 characters per second 12: 12 characters per second

15: 15 characters per second 20: 20 characters per second

24: 24 characters per second 30: 30 characters per second

TypeMatic Delay (msec) This setting controls the time between the first and the second character displayed by typeMatic auto repeat

The default is 250

250: 250 msec

500: 500 msec

750: 750 msec

1000: 1,000 msec

Security Option This category allows you to limit access to the System and Setup.

or just to Setup

The default is Setup

System The system will not boot and the access to Setup will be denied if the correct password is not entered at the prompt

Setup The system will boot but the access to Setup will be denied if the incorrect password is not entered at the prompt

PCI/VGA Palette Snoop This field controls the ability of a primary PCI VGA controller to share a common palette. When a snoop write (FC=0B) with an ISA video card

The default is Disab ed

Enabled: If an ISA card is connected to a PCI VGA card via the VESA connector, and that ISA card connects to a VGA monitor, then that ISA card uses the RAMDAC of the PCI card.

Disabled: Disables the VGA card Palette Snoop function.

Assign IRQ For VGA This option allows BIOS to assign IRQ for VGA device

Enabled. The system was assigned IRQ for VGA Card.

Disabled. The system was not assigned IRQ for VGA Card.

OS Select For DRAM = 64MB Some operating systems require special handling

Use this option only if your system has greater than 64MB of memory

The default is Non OS2

OS2. Select this if you are running the OS/2 operating system with greater than 64MB of RAM.

Non OS2. Select this for all other operating systems and configurations.

Report No EDD For WIN95 This option allows BIOS to indicate whether WIN95

is with FDD or not. The Default value is NO

NO. Report No FDD for WIN95

YES. Report FDD for WIN95

Video BIOS Shadow This option allows video BIOS to be copied into RAM

Video Shadowing will increase the video performance of your system

The default is Enabled

Enabled. Video shadow is enabled.

Disabled. Video shadow is disabled.

C8000-CBFFF Shadow

CC000-CFFFF Shadow

D0000-D3FFF Shadow

D4000-D7FFF Shadow

DB000-DBFFF Shadow

DC000-DFFFF Shadow

These categories determine whether ROMs from option cards will be copied into RAM. This will be in 6K byte or 32K byte units, and the size will depend on chipset of the option card

Enabled. Options shadow is enabled.

Disabled. Options shadow is disabled.

4-3 Chipset Features Setup

Choose the "CHIPSET FEATURES SETUP" in the CMOS SETUP UTILITY menu to display following menu:

RDRAM/ISA BIOS/IA32IPAB CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.			
Auto Configuration	Enabled	Auto Detect DIMM/PCI CLK	Enabled
EDO DRAM Timing	60ns	Spread Spectrum Modulated	Disabled
EDO CAS/NRt Wait State	2	CPU Warning Temperature	60C 1+0F
EDO RAS Wait State	2	Current CPU Temperature	3 C/AT&F
SDRAM CAS LATENCY Time	2	Current System Temp	3 C/M°F
DRAM Data Integrity Mode	Non-ECC	Current PWR SUP FAN Speed	0 RPM
System BIOS Cacheable	Disabled	Current CPU FAN Speed	3.73 RPM
Video BIOS Cacheable	Disabled	Current Chassis FAN Speed	0 RPM
Video RAM Cacheable	Enabled	CPU(V) +3.0V +3.3V +5V +12V	+3.3V +3.6V +5V +1.6V
8 Bit I/O Recovery Time	1	+12V -2.8V -2V -5V	-5V
6 Bit I/O Recovery Time	1	9	+2.0V
Memory Hole At 2MB-16MB	Disabled		
Practice Refresh	Enabled		
Delayed Transaction	Disabled		
AGP Aperture Size (MB)	64		
		F1: Quit Select Item F2: Help PUPD/ Modify F3: Old Values /Shift) F2 Color F4: Load Setup Defaults	

Figure 4 Chipset Features Setup

Auto Configuration This selects predetermined optimal values of the chipse parameters

The default is Enabled

Enabled: This enables auto-configuration and provides the option to select predefined timing modes.

Disabled: This allows the user to specify DRAM timing parameters

Note If you exceed the performance characteristics of memory in your system it will result in lockups, crashes and other problematic system operations.

EDO DRAM Speed Selection This value must correspond to the speed of the DRAM installed in your system

The default is 60ns. This item is for EDO DRAM in Pentium® II processor at 66MHz only

90ns (Faster Burst Wait State for 10ns EDO DRAM)

60ns (Slower) Burst Wait State for 60ns Fast Page Mode EDO DRAM

EDO CASx# MA Wait State This allows the option to insert an additional wait state before the assertion of the first CAS# for page hit cycle.

The default is 2

- 1 Inserts one wait state
- 2 Inserts two wait states.

EDO RASx# Wait State This allows the option to insert an additional wait state before RAS# is asserted for row misses

- 1 Inserts one wait state
- 2 Inserts two wait states.

SDRAM CAS Latency Time This setting defines the CAS timing parameter of the SDRAM in terms of clocks

The default is 3

- 2 Provides faster memory performance
- 3 Provides better memory compatibility.

System BIOS Cacheable This allows you to copy your BIOS code from slow ROM to fast RAM

The default is Disabled

Enabled: The option will improve system performance. However, if any program writes to this memory area, a system error may result.

Disabled: System BIOS non-cacheable.

Video BIOS Cacheable This option copies the video ROM BIOS to fast RAM (C0000h to C7FFFh)

The default is Enabled

Enabled: Enables the Video BIOS Cacheable to speed up the VGA Performance.

Disabled: Will not use the Video BIOS Cacheable function.

Video RAM Cacheable This option allows the CPU to cache read/writes of the video RAM.

The default is Enabled.

Enabled: This option allows for faster video access.

Disabled: Reduced video performance.

8 Bit I/O Recovery Time This function allows you to set the wait state that is added to an 8 bit ISA instruction originated by the PCI bus.

The default is 3.

- | | |
|-------------------|------------------|
| 1. No wait states | 8. 8 wait states |
| 2. 1 wait states | 2. 2 wait states |
| 3. 3 wait states | 4. 4 wait states |
| 5. 5 wait states | 6. 6 wait states |
| 7. 7 wait states | |

16 Bit I/O Recovery Time This function allows you to set the wait state that is added to an 16 bit ISA instruction originated by the PCI bus.

The default is 2.

- | | |
|-------------------|------------------|
| 1. No wait states | 4. 4 wait states |
| 3. 3 wait states | 2. 2 wait states |
| 1. 1 wait states | |

Memory Hole at 15M-16M You can reserve this memory area for the use of ISA adaptor ROMs.

The default is Disabled.

Enabled: This field enables the main memory (5-6MB) to remap to ISA BUS.

Disabled: Normal Setting.

NOTE: If this feature is enabled you will not be able to cache this memory segment.

Passive Release This option allows access from the CPU to PCI bus to be active during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM.

The default is Enabled.

Enabled: Enabled.

Disabled: Disabled.

Delayed Transaction This option allows the chipset to use its embedded 32-bit posted write buffer to support delay transactions cycles
The default is Disab ed

Enabled: Set to enabled to support PCI 2.1 specification

Disabled: Disab ed

AGP Aperture Size The amount of system memory that the AGP card is allowed to share
The default is 64

- 4. 4MB of systems memory accessible by the AGP card*
- 8. 8MB of systems memory accessible by the AGP card*
- 16. 16MB of systems memory accessible by the AGP card*
- 32. 32MB of systems memory accessible by the AGP card.*
- 64. 64MB of systems memory accessible by the AGP card*
- 128. 128MB of systems memory accessible by the AGP card.*
- 256. 256MB of systems memory accessible by the AGP card.*

Auto Detect DIMM PCI Clk Allows you to stop DIMM/PCI Clock drive when the DIMM site or PCI Slot are not plug. This item may help reduce EMI

The default is Enabled

Enabled: Provides unused DIMM/PCI to stop.

Disabled: Provides the clock generator always driving.

Spread Spectrum Modulated Allows you to active the Spread Spectrum Modulation function for reduce EMI Note When Enabled the item that performance will be impacted)

The default is Disab ed

Enabled: Provides the Spread Spectrum function from clark generator.

Disabled: NO Spread Spectrum function.

CPU Warning Temperature This is the temperature that the computer will respond to an overheating CPU

The default is Disab ed

Enabled: Temperature is monitored on the CPU

Disabled: This feature is turned off.

Current CPU Temperature This is the current temperature of the CPU

Current Power FAN Speed The current power fan speed in RPMs

Current CPU FAN Speed The current CPU fan speed in RPMs

Current Chassis FAN Speed The current chassis fan speed in RPMs

CPU(V) The voltage level of the CPU

+1.5V The voltage level of the CPU's GND+ Bus

+3.3V, +5V, +12V The voltage levels of the switch power supply

4-4 Power Management Setup

Choose the "POWER MANAGEMENT SETUP" in the CMOS SETUP UTILITY to display the following screen. This menu allows the user to modify the power management parameters and IRQ signals. In general, these parameters should not be changed unless it is absolutely necessary.

ROM PC'USA BIOS 2A/JPAB POWERMANAGEMENT SETUP AWARD SOFTWARE, INC			
Power Management	User Define	** Selectable Moduli: Timeup, Events	
PM Control by APIM	Yes	IRQ 0, 1, 3, 5, 7, 9, 10, 11, 12, 14, 15, HMI	Enabled
Video off Method	W/H Sync + Blank	Primary IDE 0	Disabled
Video off After	Standby	Primary IDE 1	Disabled
Modem IRQ	>	Secondary IDE 0	Disabled
Dock Mode	Disabled	Secondary IDE 1	Disabled
Standby Mode	Disabled	Floppy Disk	Disabled
Suspend Mode	Disabled	Serial Port	Disabled
HDD Power Down	Disabled	Parallel Port	Disabled
Throttle Duty Cycle	63.5%		
VGA Active Monitor	Enabled		
Self-off by PWD-BTWN	Delay 4 Sec		
Resume by Alarm	Enabled		
Power Loss Recovery	Enabled		
Resume By Alarm	Enabled		
Date of Month Alarm	0	Ex Out	Select Item
Time (hh:mm:ss) Alarm	0:0:0	F1 Help	PU/PD/+/-
IRQ 8 Clock Event	Disabled	F2 Old Values	Modify
		(Shift+F2)	Color
		F7 Load Setup Defaults	

Figure 5 Power Management Setup

You can only change the content of Dock Mode, Standby Mode, and Suspend Mode when the Power Management is set to User Define.

Power Management Use this to select your Power Management selection
The default is User define

Disabled. The system operates in NORMAL conditions (Non-GREEN) and the Power Management function is disabled

Max. saving. Maximum power savings. Inactivity period is 1 minute in each mode.

Min. saving. Minimum power savings. Inactivity period is 1 hour in each mode

User define. Allows user to define PM Timers parameters to control power saving mode.

PM controlled APM This option shows whether or not you want the Power Management to be controlled the Advanced Power Management (APM)
The default is Yes

Yes. APM controls your PM

No. APM does not control your PM

Video Off Method This option allows you to select how the video will be disabled by the power management

The default is V/H Sync + Blank

V/H Sync + Blank. System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer.

DPMS. Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to set video power management values

Blank Screen. System only writes blanks to the video buffer

Video Off After Tells you what time frame that the video will be disabled under current power management settings

The default is Standby

Standby. Video powers off after time shown in standby mode setting.

Dose. Video powers off after time shown in dose mode setting.

Suspend. Video powers off after time shown in suspend mode setting

N/A. Video power off no controlled by power management.

MODEM Use IRQ Name the interrupt request (IRQ) one assigned to the modem

If any on your system. Activity of the selected IRQ always awakens the system
Default is IRQ 3

- | | |
|-----------------------|---------------|
| <i>No IRQ is used</i> | <i>IRQ 3</i> |
| <i>IRQ 4</i> | <i>IRQ 5</i> |
| <i>IRQ 7</i> | <i>IRQ 9</i> |
| IRQ 10 | IRQ 11 |

The EP-6 BXA M supports HDD Power Down Doze and Standby power saving functions when using the Intel Pentium II Processor

The default is Disabled

Doze Mode The "Doze" mode timer starts to count when no "PM events" have occurred

Standby Mode When the standby mode timer times out, it will enter the standby mode and retain CPU at a slow working speed. The screen will be blanked out

Suspend Mode This function works only when the Pentium II Processor is installed. The timer starts to count when "System Standby" mode timer is timed out and no "PM Events" are occurring. Valid range is from 1 minute up to 1 hour

HDD Power Down HDD Standby timer can be set from 1 to 15 minutes

VGA Active Monitor Use this option if your monitor has advanced power saving features

The default is Enabled

Enabled: Your monitor's power features will be included in power management.

Disabled: Your monitor's power features will not be included in power management

Soft Off by PWR-BTN Use this to select your soft-off function

The default is Delay 4 sec

Instant Off: Turns off instantly.

Delay 4 Second: Turns off after a 4 second delay. If momentary press of button, the system will go into Suspend Mode. Press again to take system out of Suspend Mode.

Resume by Ring This option is used to set the remote ring-in feature. This option

is only available when Power Loss Recovery is Enabled
The default is Enabled

Enabled: The system can use remote ring-in to wake the system up.
Disabled: The system cannot use remote ring-in to wake system up.

Power Loss Recovery If the power to the system is cut off the system will turn itself back on with no user intervention
The default is Disabled

Enabled: The system will power back on after a power interruption
Disabled: The system will stay off after a power interruption

Resume by Alarm This option allows you to have the system turn on at a preset time each day or on a certain day. This option is only available when Power Loss Recovery is Enabled

The default is Enabled

Enabled: The system will turn on at the preset time
Disabled: The system will not turn on until you turn it on.

Date (of month) Alarm: This is how you set the date that the system will turn on
The default is 0

0. Setting this to 0 will turn the system on everyday at the preset time.
1-31 Represents the day of the month that you need the system to turn on.

Time (hh:mm:ss) Alarm: This sets the time that you need the system to turn on
The default is 08:00:00

**Reload Global Timer Events **

These options allow the user to reset the global power features timer if any of the enabled events occur

IRQ 3-7 9-15], NMI The default is Enable

Primary IDE 0 The default is Disable

Primary IDE 1 The default is Disable

Secondary IDE 0 The default is Disable

Secondary IDE 1 The default is Disable

Floppy Disk The default is Disable

Serial Port The default is Enable

Parallel Port The default is Disable

4-5 PNP/PCI Configuration

The PNP/PCI configuration program is for the user to modify the PCI/ISA IRQ signals when various PCI/ISA cards are inserted in the PCI or ISA slots
 ROM PC/ISA BIOS 2A69k PA9

WARNING: Conflicting IRQ settings can cause your system to not find certain devices
 AWARD SOFTWARE, INC.

PNP OS Installed		HD	PCT IDE IRQ Map To	PCI-AUTD
Boot-up is Commanded By	BIOS	Manual	Primary IDE INT#	A
Power Configuration Data		Disabled	Secondary IDE INT#	B
IRQ-3	Assigned to	Legacy ISA	Used MEM base addr	N/A
IRQ-4	Assigned to	Legacy ISA	Assign IRQ For USB	Enabled
IRQ-5	Assigned to	PCI/ISA PnP		
IRQ-7	Assigned to	PCI/ISA PnP		
IRQ-9	Assigned to	PCI/ISA PnP		
IRQ-10	Assigned to	PCI/ISA PnP		
IRQ-11	Assigned to	PCI/ISA PnP		
IRQ-12	Assigned to	PCI/ISA PnP		
IRQ-14	Assigned to	PCI/ISA PnP		
IRQ-15	Assigned to	PCI/ISA PnP		
DMA-0	Assigned to	PCI/ISA PnP		
DMA-1	Assigned to	PCI/ISA PnP		
DMA-3	Assigned to	PCI/ISA PnP		
DMA-4	Assigned to	PCI/ISA PnP		
DMA-6	Assigned to	PCI/ISA PnP		
DMA-7	Assigned to	PCI/ISA PnP		
			↑ ↓ → Selection	
			F1 Help	PU/PD/F4 Modify
			F2 Del Value	Shift+F2 Copy
			F3 Load Setup Defaults	

Figure 6 PCI Configuration Setup

PNP OS Installed Do you have a PNP OS installed on your system. The default is No

Yes. Select if you are using a PNP OS

No. Select if your OS does not support PNP

Resources Controlled By Who controlled the system PNP/PCI resources
 The default is Manual

Manual PNP Card's resources will be controlled manually. You can set which IRQ-X and DMA-X are assigned to PCI/ISA PNP or Legacy ISA Cards.

Auto. If your ISA card and PC card are all PNP cards. B.O.S will assign the interrupt resource automatically.

Reset Configuration Data. This setting allows you to clear ESCD data. The default is Disabled.

Disabled: Normal Setting.

Enabled: if you have plugged in some Legacy cards to the system and they were recorded into ESCD Extended System Configuration Data, you can set this field to Enabled in order to clear ESCD.

PCI IDE IRQ Map To This item allows the user to configure the system for the type of IDE hard disk controller in use. By default the BIOS assumes that the hard drive controller is an ISA device rather than a PCI controller. If you are using a PCI controller then you will need to change this to specify which PCI slot has the controller and which PCI interrupt A, B, C or D is associated with the connected IDE devices.

The default value is PCI#4. The PCI#4 slot shows PCI#4 system to automatically config are the IDE devices

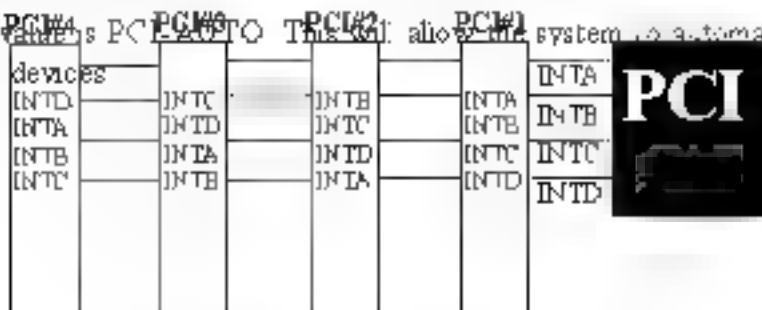


Figure 7: The Combination of PCI INT#lines

Used MEM base addr The Used MEM base addr CB00, CC00 D000 D400, D800, DC00 and Used MEM Length (8K, 16K, 32K, 64K) are used to support some specific ISA Legacy cards with requested memory space below 1M address. Now with these two functions users can define where the used memory address is located and its length of the legacy area that is used by the legacy device to avoid the memory space conflict. For example if you select "D000" for Used MEM base addr" and "16K" for "Used MEM Length" that means the address region D000H-D3FFFH is occupied by ISA legacy cards, and thus BIOS will not assign this region for PnP ISA and PCI cards.

The default is N/A.

Assign IRQ For USB This item allows BIOS to assign whether IRQ's with USB or not. If you have not connect the USB device. Can release the IRQ for other device. The default is Enabled.

Enabled Provides IRQ for USB device

Disabled Release IRQ for other device

4-6 Load Setup Defaults

The "LOAD SETUP DEFAULTS" function loads the system default data directly from ROM and initializes the associated hardware properly. This function will be necessary only when the system CMOS data is corrupted.

4-7 Integrated Peripherals

ROM PCISA BIOS/2A69KPA9 INTEGRATED PERIPHERALS AWARD SOFTWARE, INC			
IDE HDD Block Mode	Enabled	Onboard Parallel Port	IRQ7
IDE Primary Master PIO	Auto	Onboard Parallel Mode	ECP EPP
IDE Primary Slave PIO	Auto	ECP Mode Or DMA	
IDE Secondary Master PIO	Auto	Parallel Port EPP Type	EPP1.9
IDE Secondary Slave PIO	Auto		
IDE Primary Master UDMA	Auto	POWER ON Method	Hot Key
IDE Primary Slave UDMA	Auto	KB Power On Password	Enter
IDE Secondary Master UDMA	Auto	Hot Key Power On	Ctrl-F1
IDE Secondary Slave UDMA	Auto		
Onboard Primary PCI IDE	Enabled		
Onboard Secondary PCI IDE	Enabled		
PS/2 Keyboard Support	Disabled		
PS/2 Input Clock	1.8MHz		
Onboard FDD Controller	Enabled		
Onboard Serial Port	Auto	F6 Quit	↑ ↓ → Select item
Onboard Serial Port 2	Auto	F7 Help	F1/F2/F3 Modify
Onboard IF Controller	Disabled	F8 Old Value	(Shift F3) Color
		F1 Load Setup Defaults	

Figure 8 Integrated Peripherals

Note: If you do not use the Onboard IDE connector, then you will need to set

IDE HDD Block Mode IDE Block Mode allows the controller to access blocks of sectors rather than a single sector at a time.

The default is Enabled.

Enabled: Enabled IDE HDD Block Mode Provides higher HDD transfer rates.

Disabled: Disables IDE HDD Block Mode.

Onboard Primary PCI IDE The default value is Enabled.

Enabled: Enables Onboard IDE primary port.

Disabled: Disables Onboard IDE primary port.

Onboard Secondary PCI IDE

The default is Enabled.

Enabled: Enables Onboard IDE secondary port.

Disabled: Disables Onboard IDE secondary port.

IDE Primary Master PIO

The default is Auto.

Auto: BIOS will automatically detect the Onboard Primary Master PCI IDE HDD Accessing mode.

Mode 0~4: Manually set the DB Programmed interrupt mode.

IDE Primary Slave PIO

The default is Auto.

Auto: BIOS will automatically detect the Onboard Primary Slave PCI IDE HDD Accessing mode.

Mode 0~4: Manually set the DB Programmed interrupt mode.

IDE Secondary Master PIO

The default is Auto.

Auto: BIOS will automatically detect the Onboard Secondary Master PCI IDE HDD Accessing mode.

Mode 0-4 Manually set the IDE Programmed interrupt mode.

IDE Secondary Slave PIO:

The default is Auto

Auto. BIOS will automatically detect the Onboard Secondary Slave PCI IDE HDD Accessing mode.

Mode 0-4 Manually set the IDE Programmed interrupt mode

IDE Primary Master UDMA: This allows you to select the mode of operation for the hard drive

The default is Auto

Auto. The computer will select the optimal setting.

Disabled. The hard drive will run in normal mode

IDE Primary Slave UDMA: This allows you to select the mode of operation for the hard drive

The default is Auto

Auto. The computer will select the optimal setting.

Disabled. The hard drive will run in normal mode

IDE Secondary Master UDMA: This allows you to select the mode of operation for the hard drive

The default is Auto

Auto. The computer will select the optimal setting.

Disabled. The hard drive will run in normal mode

IDE Secondary Slave UDMA: This allows you to select the mode of operation for the hard drive

The default is Auto

Auto. The computer will select the optimal setting.

Disabled. The hard drive will run in normal mode.

USB Keyboard Support: This controls the activation status of an optional USB keyboard that may be attached.

The default is disabled

Enabled: Enable USB keyboard support.

Disabled: Disable USB keyboard support.

OnBoard Primary PCI IDE This option turns on and off the onboard primary IDE

The default is enabled

Enabled: This activates the primary PCI IDE.

Disabled: This disables the primary PCI IDE and frees up the resources.

OnBoard Secondary PCI IDE This option turns on/off the onboard secondary IDE

The default is enabled

Enabled: This activates the secondary PCI IDE.

Disabled: This disables the secondary PCI IDE and frees up its resources.

KBC input clock This sets the keyboard clock value

The default is .2 MHz

Options: 6, 8, 12, 16 are the available choices.

Onboard FDC Controller This controls the state of the onboard floppy controller

The default value is Enabled

Enabled: Enable the Onboard Winbond Chip's floppy drive interface controller.

Disabled: Disable the Onboard Winbond Chip's floppy drive interface controller.

Onboard Serial Port 1 This field allows the user to configure the 1st serial port

The default is Auto

AUTO: Enable Onboard Serial port 1 and address is Auto adjusted.

COM1: Enable Onboard Serial port 1 and address is 3F8H/IRQ4.

COM2: Enable Onboard Serial port 1 and address is 2F8H/IRQ3.

COM3: Enable Onboard Serial port 1 and address is 3E8H/IRQ4.

COM4: Enable Onboard Serial port 1 and address is 2E8H/IRQ3.

Disabled: Disable Onboard SMC CHIP's Serial port 1.

Onboard Serial Port 2 This field allows the user to configure the 2nd serial port

The default is Auto

AUTO: Enable Onboard Serial port 2 and address is Auto adjusted.

- COM1** Enable Onboard Serial port 1 and address is 3F8H IRQ4.
COM2 Enable Onboard Serial port 2 and address is 2F8H IRQ3.
COM3 Enable Onboard Serial port 3 and address is 3E8H IRQ4.
COM4 Enable Onboard Serial port 4 and address is 2E8H IRQ3.
Disabled Disable Onboard SMC CHIP's Serial port 2.

UART Mode Select The mode of the IR Controller
 The default is Normal

IrDA Support a Serial Infrared Interface IrDA

ASKIR Support a Sharp Serial Infrared Interface formats

Normal The IRRX and IPTX pins of IR function in normal condition

Onboard Parallel port This field allows the user to configure the LPT port
 The default is 378H IRQ7

- 378H** Enable Onboard LPT port and address is 378H and IRQ7
278H Enable Onboard LPT port and address is 278H and IRQ5
3BCH Enable Onboard LPT port and address is 3BCH and IRQ7
Disabled Disable Onboard Winbond Chip's LPT port.

Parallel Port Mode This field allows the user to select the parallel port mode
 The default is ECP+EPP

- Normal** Standard mode, IBM PC AT Compatible bidirectional parallel port.
EPP Enhanced Parallel Port mode
ECP Extended Capabilities Port mode
EPP+ECP ECP Mode & EPP Mode

ECP Mode USE DMA This field allows the user to select DMA1 or DMA3 for the ECP mode
 The default is DMA3

- DMA1** This field selects the routing of DMA1 for the ECP mode
DMA3 This field selects the routing of DMA3 for the ECP mode

Power On Method There are "Button Only", "Hot Key" and "Any key" can be chosen by this field that allows users to select one of these various functions as Power On Method for their requirement

The default value in this selection is "Hot Key" [Ctr F1]

Hot Key: User can press "Control Key" (Ctr), and "Function Key" (from F1 to F12) individually to power on the system.

The interval between "Ctr," key and function Key (F1-F12) must be short

Anykey: Press anykey to power on the system

Button Only: This power on method is controlled by J3 (pw-on). Use Power On Button to power on the system.

Password: User can Power On the System by password. the password can be entered from 1 to 5 characters. The maximum of password is 5 characters.

If user forgets lost the password, please go into BIOS setting to change the Power On Method, or assign another words as password instead of original one.

4-8 Change Supervisor or User Password

To change the password, choose the "SUPERVISOR PASSWORD" or "USER PASSWORD" option from the CMOS SETUP UTILITY menu and press Enter

NOTE: Either "Setup" or "System" must be selected in the "Security Option" of the BIOS FEATURES SETUP menu

- 1 If CMOS is corrupted or the option was not used, a default password stored in the ROM will be used. The screen will display the following message

Enter Password

Press the [Enter] key to continue after the proper password is given

- 2 If the CMOS is corrupted or the option was used earlier and the user wishes to change the default password the SETUP UTILITY will display a message and ask for a confirmation

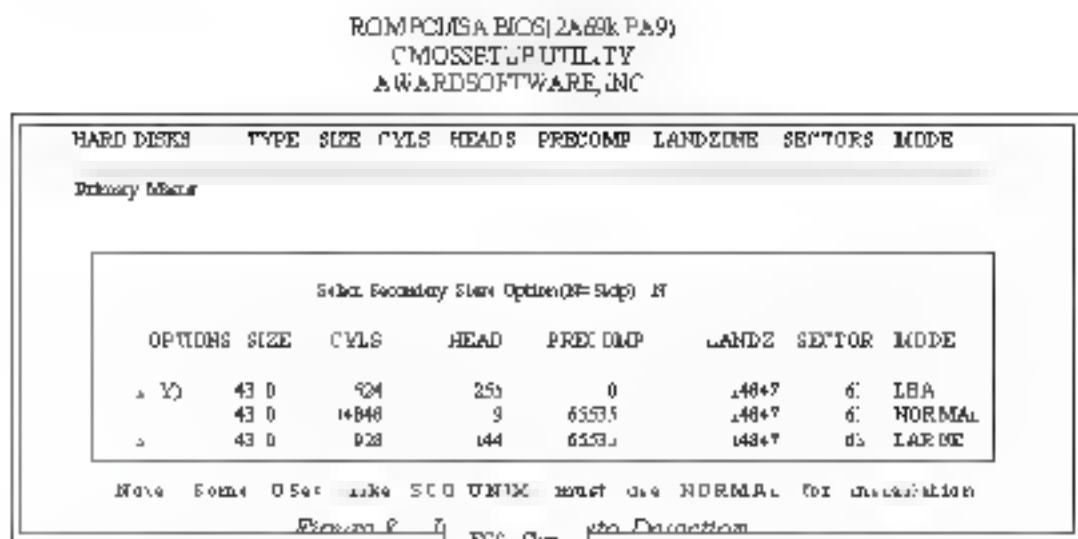
Confirm Password

- 3 After pressing the [Enter] key (ROM password if the option was not used or current password (user defined password)), the user can change the password

and store new one in CMOS RAM. A maximum of 8 characters can be entered

IDE HDD Auto Detection

The "IDE HDD auto detection" utility is a very useful tool, especially when you do not know which kind of hard disk type you are using. You can use this utility to detect the correct disk type installed in the system automatically. But now you can set HARD DISK TYPE to Auto in the STANDARD CMOS SETUP. You don't need the "IDE HDD AUTO DETECTION" utility. The BIOS will Auto detect the hard disk size and model on display during POST.



NOTE: HDD Modes

The Award BIOS supports 3 HDD modes: NORMAL, LBA & LARGE. NORMAL mode

Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing

The maximum number of cylinders, head & sectors for NORMAL mode are

1024 16 & 63

<u>no. Cylinder</u>	024
<u>x no. Head</u>	16
<u>x no. Sector</u>	63)
<u>x no. per sector</u>	<u>512)</u>
	528 Megabytes

If user set his HDD to NORMAL mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that.

LBA (Logical Block Addressing) mode A new HDD addressing method to overcome the 528 Megabyte bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD. During HDD accessing, the IDE controller will transform the logical address described by sector, head & cylinder into its own physical address inside the HDD. The maximum HDD size supported by LBA mode is 84 GigaBytes which is obtained by the following formula:

<u>no. Cylinder</u>	024)
<u>x no. Head</u>	255
<u>x no. Sector</u>	63)
<u>x bytes per sector</u>	<u>512,</u>
	84 GigaBytes

LARGE mode Extended HDD access mode supported by Award Software

Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not want LBA). The Award BIOS provides another alternative to support these kinds of LARGE mode.

<u>CYLS</u>	<u>HEADS</u>	<u>SECTOR</u>	<u>MODE</u>
120	16	63	NORMAL
560	32	63	LARGE

BIOS tricks DOS or other OS' that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside.

INT 12h in order to access the right HDD address.

Maximum HDD size

# Cylinder	1024
# Head	16
# Sector	63
<u>bytes per sector</u>	<u>512</u>
	GigaByte

Note. To support LBA or LARGE mode of HDDs, there must be some software involved. All the software is located in the Award HDD Service Routine (INT 13h). It may fail to access a HDD with LBA (LARGE) mode selected if you are running under an Operating System which replaces the whole INT 13h.

UNIX operating systems do not support either LBA or LARGE and must use the Standard mode. UNIX can support drives larger than 528MB.

4-18 HDD Low Level Format

Interleave Select the interleave number of the hard disk drive you wish to perform a low level format on. You may select from 1 to 8. Check the documentation that came with the drive for the correct interleave number or select 0 for automatic detection.

Auto scan bad track This allows the utility to scan first then format by each track.

Start Press Y to start low level format.

3-11 Save & Exit Setup

The "SAVE & EXIT SETUP" option will bring you back to the boot up procedure with all the changes you just recorded in the CMOS RAM.

3-12 Exit Without Saving

The "EXIT WITHOUT SAVING" option will bring you back to normal boot up procedure without saving any data into CMOS RAM.

All old data in the CMOS will not be destroyed.

Section 5 DMI ACCESS

2011 Access

DML, or desktop Management Interface, is a feature that's able to auto-detect and record information about your computer system. This information is used by computing professionals to accurately determine your system configuration and to diagnose and resolve problems.

The computer's BIOS will detect and record as much information as it is able to and will store that information in a special location in the BIOS.

The DMI configuration study will allow system integrators to add information that the BIOS cannot detect, such as model and brand of motherboard and other components. This information cannot be detected by the BIOS and must be added by the system integrator or vendor.



Figure : Dali Screen Shot

Appendix A:**A-1 MEMORY MAP**

Address Range	Size	Description
[00000-7FFFF]	512K	Conventional memory
[80000-9FBFFF]	127K	Extended Conventional memory
[9FC00-9FFFF]	1K	Extended BIOS data area if PS/2 mouse is installed
[A0000-C7FFF]	160K	Available for Hi-DOS memory
[C8000-DFFFF]	96K	Available for Hi-DOS memory and adapter ROMs
[E0000-EFFFF]	60K	Available for 1 MB
[EF000-EFFFF]	4K	Video service routine for Monochrome & CGA adaptor
[F0000-F7FFF]	32K	BIOS CMOS setup utility
[F8000-FCFFF]	20K	BIOS runtime service routine (2)
[FD000-FDFFF]	4K	Plug and Play ESCD data area
[FE000-FFFFF]	8K	BIOS runtime service routine

A-2 I/O MAP

[000-01F]	DMA controller (Master)
[020-02F]	INTERRUPT CONTROLLER (Master)
[022-023]	CPU PSET control registers I/O ports
[040-05F]	TIMER control registers
[060-06F]	KEYBOARD interface controller (BD42)
[070-07F]	RTC ports & CMOS I/O ports
[080-09F]	DMA register
[0A0-0BF]	INTERRUPT controller (Slave)
[0C0-0DF]	DMA controller (Slave)
[0F0-0FF]	MATHCOProcessor
[100-10F]	HARDDISK controller
[270-27F]	PARALLEL port 0
[2B0-2DF]	GRAPHICS adapter controller
[2F0-2FF]	SERIAL port 2
[300-36F]	NETWORK ports
[370-37F]	PARALLEL port
[3B0-3BF]	MONOCHROME & PARALLEL port adapter
[3C0-3CF]	ECA adapter

4D0-3DF]	CGA adapter
3F0-3FF]	FLOPPY DISK controller
3FB-3FF]	SER A+ port

A-3 TIMER & DMA CHANNELS MAP

TIMER MAP

- TIMER Channel 0 System timer interrupt
- TIMER Channel 1 DRAM REFRESH request
- TIMER Channel 2 SPEAKER tone generator

DMA CHANNELS

- | | |
|---------------|----------------------------|
| DMA Channel 0 | Available |
| DMA Channel 1 | Onboard ECP (Option) |
| DMA Channel 2 | FLOPPY DISK 'SMC CHIP' |
| DMA Channel 3 | Onboard ECP (default) |
| DMA Channel 4 | Cascade for DMA controller |
| DMA Channel 5 | Available |
| DMA Channel 6 | Available |
| DMA Channel 7 | Available |

A-4 INTERRUPT MAP

NMI

Parity check error

RQ H/W)

- 0 System TIMER interrupt from TIMER 0
KEYBOARD output buffer full
- 2 Cascade for RQ 3-5
- 3 SERIAL port 2
- 4 SERIAL port
- 5 PARALLEL port 2
- 6 FLOPPY DISK 'SMC CHIP'
- 7 PARALLEL port 1
- 8 RTC clock
- 9 Available
- 0 Available
- Available
- 2 PS/2 Mouse
- 3 MATH coprocessor

-
- 4 Onboard HARD DISK (IDE, channel)
 - 5 Onboard HARD DISK (IDE, channel)

A-5 RTC & CMOS RAM MAP

RTC & CMOS

- 00 Seconds
- 01 Second alarm
- 02 Minutes
- 03 Minutes alarm
- 04 Hours
- 05 Hours alarm
- 06 Day of week
- 07 Day of month
- 08 Month
- 09 Year
- 0A Status register A
- 0B Status register B
- 0C Status register C
- 0D Status register D
- 0E Diagnostic status byte
- 0F Shutdown byte
- 10 FLOPPY DISK drive type byte
- 11 Reserve
- 12 HARD DISK type byte
- 13 Reserve
- 14 Equipment type
- 15 Base memory low byte
- 16 Base memory high byte
- 17 Extension memory low byte
- 18 Extension memory high byte
- 19 2d
- 2E 2F
- 30 Reserved for extension memory low byte
- 31 Reserved for extension memory high byte
- 32 DATE CENT JRY byte
- 33 INFORMATION FLAG
- 44 F Reserve
- 40 7F Reserved for CHIPSET SETTING DATA

Appendix B**B-1 POST CODES**

SA POST codes are typically output to I/O port address 80h

POST (hex)	DESCRIPTION
00-02	Reserved
00	Turn off OEM specific cache, shadow
03	Initialize EISA registers (EISA BIOS only)
2	Initialize all the standard devices with default values Standard devices includes DMA controller (8237) Programmable interrupt Controller (8259), Programmable interval Timer (8254) RTC chip
04	Reserved
05	Keyboard Controller Self Test
06	2 Enable Keyboard Interface
07	Reserved
08	Verifies CMOS's basic R/W functionality
C1	Auto detection of onboard DRAM & Cache
C5	Copy the BIOS from ROM into ED000-FFFFF shadow RAM so that POST will go faster
D8	Test the first 256K DRAM
D9	OEM specific cache initialization (if needed)
DA	Initialize the first 32 interrupt vectors with corresponding interrupt handlers Initialize INT numbers from 33- 20 with Dummy Spurious interrupt Handler
2	Issue CPI D instruction to identify CPI type
3	Early Power Management initialization OEM specific
0B	Verify the RTC time is valid or not
2	Detect bad battery
3	Read CMOS data into BIOS stack area
4	PnP initializations including (PnP B OS only) Assign CSN to PnP card. Create resource map from ESCD
5	Assign I/O & Memory for PCI devices (PC BIOS only)

0C	Initialization of the BIOS Data Area. (40:0N - 40:FF)
0D	<ol style="list-style-type: none"> 1. Program some of the Chipset's value according to Setup, (Early Setup Value Program) 2. Measure CPU speed for display & decide the system clock speed 3. Video initialization including Monochrome, CGA, EGA/VGA. If no display device found, the speaker will beep
0E	<ol style="list-style-type: none"> 1. Test video RAM. (If Monochrome display device found) 2. Show messages including <ul style="list-style-type: none"> - Award Logo, Copyright string, BIOS Data code & Part No. - OEM specific sign on messages - Energy Star Logo. (Green BIOS ONLY) - CPU brand, type & speed - Test system BIOS checksum. (Non-Compress Version only)
0F	DMA channel 0 test.
10	DMA channel 1 test.
11	DMA page registers test.
12-13	Reserved.
14	Test 8254 Timer 0 Counter 2.
15	Test 8259 interrupt mask bits for channel 1.
16	Test 8259 interrupt mask bits for channel 2
17	Reserved
19	Test 8259 functionality.
LA-1D	Reserved
1E	If EISA NVM checksum is good, execute EISA initialization (EISA BIOS only)
1F-29	Reserved.
30	Detect Base Memory & Extended Memory Size.
31	<ol style="list-style-type: none"> 1. Test Base Memory from 256K to 640K. 2. Test Extended Memory from 1M to the top of memory.
32	<ol style="list-style-type: none"> 1. Display the Award Plug & Play BIOS Extension message. (PnP BIOS only) 2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD port, ... according to setup value
33-3B	Reserved.
3C	Set flag to allow users to enter CMOS Setup Utility.
3D	<ol style="list-style-type: none"> 1. Initialize Keyboard. 2. Install PS2 mouse

3E	Try to turn on Level 2 cache. Note: Some chipsets may need to turn on the L2 cache in this stage. But usually, the cache is turned on later in POST 6th.
3F-40	Reserved
BF	1. Program the rest of the Chipset's value according to Setup (Later Setup Value Program) 2. If auto-configuration is enabled, program the chipset with pre-defined Values
41	Initialize floppy disk drive controller
43	Initialize Hard drive controller
45	If it is a PnP BIOS, initialize serial & parallel ports
44	Reserved
45	Initialize math coprocessor
46-4D	Reserved
4E	If there is any error detected (such as video, keyboard), show all error messages on the screen & wait for user to press <F1> key.
4F	1. If password is needed, ask for password 2. Clear the Energy Star Logo, (Green BIOS only)
50	Write all CMOS values currently in the BIOS stack area back into the CMOS.
51	Reserved
52	1. Initialize all ISA ROMs 2. Later PCI initializations, (PCI BIOS only) - assign IRQ to PCI devices - initialize all PCI ROMs. 3. PnP initializations (PnP BIOS only) - assign IO, Memory, IRQ & DMA to PnP ISA devices - initialize all PnP ISA ROMs 4. Program shadows RAM according to Setup settings 5. Program parity according to Setup setting 6. Power Management Initialization - Enable/Disable global PM - APM interface initialization.
53	1. If it is NOT a PnP BIOS, initialize serial & parallel ports 2. Initialize time value in BIOS data area by translate the RTC time value into a timer tick value
60	Setup Virus Protection (Boot Sector Protection) functionality according to Setup setting

- 61 1. Try to turn on Level 2 cache.
 Note: If L2 cache is already turned on in POST 3D, this part will be skipped.
2. Set the boot up speed according to Setup setting
 3. Last chance for Chipset initialization.
 4. Last chance for Power Management initialization. (Green BIOS only)
 5. Show the system configuration table.
- 62 1. Setup daylight saving according to Setup value.
2. Program the NUM Lock, typematic rate & typematic speed according to Setup setting
- 63 1. If there is any changes in the hardware configuration, update the ESCD information. (PnP BIOS only)
2. Clear memory that have been used.
 3. Boot system via INT 19H.
- FF System Booting. This means that the BIOS already pass the control right to the operating system.

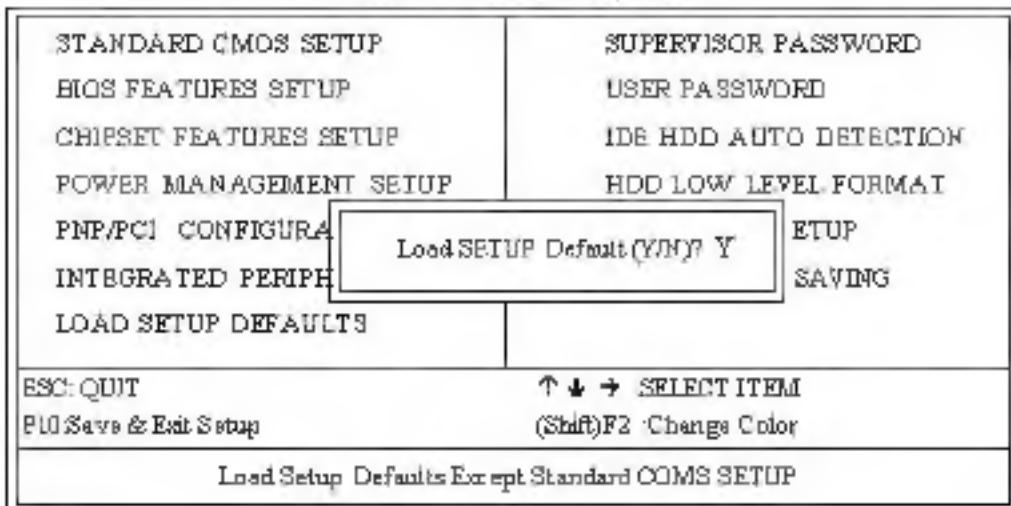
B-2 Unexpected Errors:

POST (hex)	DESCRIPTION
B0	If interrupt occurs in protected mode
B1	Unclaimed NMI occurs.0

Appendix C**NOTE:**

The "LOAD SETUP DEFAULTS" function loads the system default data directly from ROM and initializes the associated hardware properly. This function will be necessary when you accept this mainboard, or the system CMOS data is corrupted.

ROM PCI/ISA BIOS(2A69KPA9)
CMOSSETUP UTILITY
AWARD SOFTWARE, INC.

**LOAD SETUP DEFAULTS**